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Brazilian Home Automation in a Glance

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In the academic field, the number of projects related to pervasive environments and home automation technology has increased considerably in Brazilian Universities in the last five years.

Devices to make homes smarter are not new; X-10 appliances have been sold since the late 70's. The benefits and features of smart homes have been highlighted again in the last ten years, pushed by the Internet and by mobile communications, re-introducing, after two decades, applications of remote control and monitoring in residential environment. They not only provide better ways to transfer information within homes, but also they provide better time management too. In addition, they improve the quality of our lives by automating some of the electrical home appliances. On the other hand, all this smart stuff still needs great research in order to develop non-invasive, whole-time systems and devices, bringing real comfort and safety to smart house owners.



The use of such smart devices in a house and the immersion of people in an active computational environment allow several discussions and questions when the human behavior is analyzed. In this context, a young science as Domotics takes place, inheriting many ideas, viewpoints and techniques from other disciplines as Engineering, Computing, Artificial Intelligence, Sociology and Philosophy. Domotics not only comprehends all technological subjects related to smart homes, but also concerns all sorts of user interactions in a 24-hour active computational environment.

The term "smart" is used here for systems/devices that gather values and can be considered on a developed state (combining some autonomy level and decision taken), separating them from systems/devices on a simplest state. However, I don't want to make any mention to human capacity or to offend the concepts defined in Artificial Intelligence or Cognitive Science. Commercially, these terms have been used to invoke new

functionalities and features of equipments, appliances and services. But, really, many times they don't effectively develop any kind of intellect or discerning.

The miniaturization of the smart appliances and a straightforward possibility of being connected to others devices have opened up a wide variety of new applications, motivating researches about subjects never thought before. With a bunch of new appliances surrounding users 24 hours a day, some paradigms had to be restructured. One example is the man-machine interface that have been remodeled in order to promote a better interaction by any user inside the house, including elders, children and any person with some kind of disability.

The high import duties, taxes and the exchange rate (U.S. Dollar to Brazilian Real, 1:2) stimulate initiatives for local house automation products development. The deregulation of world home automation market also allows these initiatives. Many non-standard products and solutions have appeared. Custom planning, product installation and configuration, and other related services have been a source of a good income (Aureside - The Brazilian Home Automation Association recently posted some statistics about the market). But, if more solutions are better for market competition, as well giving consumers greater selection and better products, ironically, the lack of interoperability is seen as the main barrier to home automation market growth.

In the academic field, the number of projects related to pervasive environments and home automation technology has increased considerably in Brazilian Universities in the last five years. Students have seen a bunch of smart home advertisements in magazines or on TV and they want to participate in this relevant market. But, once they start reading the bibliography available, they find out how big the universe of smart homes really is. They realize they can do more than light control applications (the first idea about a home automation project for most of them) and develop nice devices and services to really help people in their homes.

The main developed subjects usually are user interactions, biometry, location aware applications, home networks, control methods and access interfaces. However, recently, energy resources problems are being studied. Nowadays, home automation has also been pointed out as a tool for a rational and efficient use of energetic resources in a water, oil and electricity scarceness era. The control systems have been optimized to cooperate with other systems to achieve maximum comfort, safety and efficient use of resources. But, even though Brazil has large energy resources (e.g. oil, hydroelectric, solar, sugar cane and corn) there are some issues that don't put it in a better position than others countries. Since energy is being sold overseas, the international price is becoming too high for Brazilian industries and people. The situation overturned and now Brazil has to increase the efforts to reduce energy consumption in order to survive the next decade. In this scenario, home automation shows up again as an important tool to develop energy efficient houses and devices.